

### **REMARKS - General**

By the above amendment, applicant has currently amended the claims 1, 4-9, 11 and 16 to define the invention more particularly and distinctly so as to overcome the technical objections and rejections and define the invention patentably over the prior art references.

#### **The Objection To The Claims Objections**

The claims 5 and 16 were objected because of the following informalities:

In claim 5, the word "Said" at the beginning of the last line (line 12) should be changed to --"said"--.

In claim 16, the semi-colon ";" at the end of the claim (line 15) should be changed to a period --"."--.

Applicant has currently amended the claims 5 and 16 and corrected the wrong word "Said" to the word "said" in the claim 5 and the wrong semi-colon ";" to a period "." in the claim 16. Accordingly, applicant submits that the claims 5 and 16 comply with the examiner's requirements and therefore requests reconsideration and withdrawal of the objections.

#### **The Rejection of Claim 1 on Medvedev, et al. (US Patent, US-6,862,271) in view of Franca-Neto (US Patent Application Publication, 2004/0189410 A1) and further in view of Catreux et al. (US Patent Application Publication, 2005/0053170 A1) Under 35 USC 103(a) Are Overcome**

The office action rejected the independent claim 1 on the patent of Medvedev, et al. in view of the patent application on Franca-Neto and further in view of the patent application on Catreux, et al.

The independent claim 1 has been currently amended and the corresponding dependent claims 4-9 and 11 have also been amended.

All of the amendment claims 1, 4-9 and 11 are to emphasize the novelty of the invention and to define patentably over these prior-art references, and/or any combination thereof. Applicant requests reconsideration of these rejections, as now applicable to the

amendment independent claim 1 and the corresponding amendment dependent claims 4-9 and 11 and the original dependent claims 2-3 and 10 for the following reasons:

- (1) There are no justification, in Medvedev, et al., or in any other prior arts separate from applicant's disclosure, which suggest that these references be individual or be combination way in the manner proposed.
- (2) Even if Medvedev, et al., Franca-Neto, and Catreux, et al. were to be combined in the manner proposed, the proposed combination would not show all the novel physical feature of the amendment claims 1, 4-9 and 11, and the original claims 2-3 and 10.
- (3) These novel physical features of the amendment independent claim 1 and the amendment dependent claims 4-9 and 11, and the original dependent claims 2-3 and 10 produce new and unexpected results in such a way that proposed multimode and multiband MIMO transceiver of W-CDMA, WLAN and UWB communication completely operates in the different methods and deals with the different signals in the different situations that Medvedev, et al. or any other prior arts suggested, and therefore are novelty, unobvious and patentable over these prior-art references.

#### **The Objection To The Claims Rejection**

The claims from 2 to 11 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent from including all of the limitations of the base claim and any intervening claims and including the objection to claim 5 as noted in the office action.

Applicant has currently amended the claims 4-9 and 11 to provide sufficient antecedent basis for the limitation and intervening claims. Accordingly, applicant submits that the amendment claims 4-9 and 11, and the original claims 2-3 and 10 do comply with the suggestions and therefore requests reconsideration and withdrawal of this objection.

### **The References And Differences Of The Present Invention Thereover**

Prior to discussing the claims and the above three points, applicant will first discuss the prior-art references and the general novelty of the present invention and its unobviousness over these prior-art references.

**Present Invention** - The present invention is a next-generation multimode and multiband MIMO transceiver of W-CDMA, WLAN, and UWB communication for wireless and fixed wireless communications. The invented transceiver system is a MIMO-based multimode and multiband portable station, which employs multiple antennas at the transmitter and receiver for W-CDMA, WLAN, and UWB communications. During the wireless communications, the W-CDMA has a multicarrier for 12 channels with a total of 15-MHz frequency bandwidth at the center of 1.9 GHz frequency band and is able to transmit the data rate more than 2 Mbps. The W-CDMA system can be used as a cellular phone for data transmissions, including speech, data, image, and clip video, for a longer transmission distance in outdoor and indoor environments. During the fixed wireless communications, the WLAN can transmit and receive the data rate up to 54 Mbps at the frequency bands of the 5.15 – 5.35 GHz and the 5.725 – 5.825 GHz. The UWB communication uses a four-multiband with each multiband of frequency bandwidth about 512 MHz in the frequency range from 3.1 GHz to 5.15 GHz and is able to transmit the data rate at 1.5 Gbps. Both of WLAN and UWB communications are usually used in an indoor environment. Thus, the invented transceiver system of combining W-CDMA, WLAN, and UWB into a specific portable device is enable a user to do multiple tasks at

the same time, such as internet surf, MP3 music, DVD, video game, graph viewing, transmission data with other devices in a real-time operation.

Further note that the present invention of the multimode and multiband MIMO transceiver of W-CDMA, WLAN, and UWB communication integrates benefits of a wireless phone and fixed wireless broadband communications. Thus, the present invention not only can transmit the packet data in a form of wireless phone environment but also can use as a very-high speed wireless broadband Internet device to transmit and receive in a real-time. In addition, since the UWB communication can transmit a very-high data rate but with a very short-distance range while the WLAN is able to transmit the lower data rate in a much longer distance range than the UWB communication, the applicant invention of combining WLAN and UWB for the fixed wireless communications allows transmitting very high data rate in longer distance in the indoor environment. Furthermore, the applicant invention simultaneously utilizes multiple antennas on both transmitter and receiver by processing signal samples both in space and time, thereby increasing array gain, spatial and temporal diversity, improving average signal power, mitigate fading, and reducing co-channel interference and intersymbol interference. Hence, the applicant invention significantly improves the capacity, coverage, and quality of wireless and fixed wireless communications. Therefore, the applicant invention can utilize each other benefits of W-CDMA, WLAN, and UWB to allow multiply applications in a single device of delivering a very-high data rate with flexibility and scalability capabilities in a combination form of wireless and fixed wireless environments.

**Medvedev, et al.** presented MIMO systems with multiple transmission modes, which focus on the techniques to transmit data on a number of transmission channels in a multi-channel communication system by using less channel-state information (CSI).

Medvedev, et al. presented a sharing memory bank (figure 3, element 332), a tri-mode interleaver and tri-mode coding processor (figure 3, element 314, column 20 line 34 to column 21 line 21), a multiple antenna unite including identical antennas (figure 3, column 14 line 10-38). It can be seen that the sharing memory bank (figure 3, element 332) is not a sharing memory bank since the memory (figure 3, element 332) is only connected to a controller (figure 3, element 330) while the applicant's invention uses a sharing memory bank that is connected with four different function blocks for different operation modes. Thus, Medvedev's sharing memory bank (figure 3, element 332) is different from the applicant invention's sharing memory bank. In addition, Medvedev presented the tri-mode interleaver and tri-mode coding processor (figure 3, element 314, column 20 line 34 to column 21 line 21) that is used to format, code, and interleave the traffic data based on one or more coding schemes rather than is used for the different communication standards, such as W-CDMA, WLAN and UWB, for interleaver operations. The applicant invention presents a tri-mode interleaver and a tri-mode coding processor that deal with different communications standards, including W-CDMA, WLAN and UWB. Therefore, it is clear that the applicant invention's tri-mode interleaver and tri-mode coding processor is different from Medvedev's tri-mode interleaver and tri-mode coding processing.

Therefore, the applicant's invention of using the next-generation multimode and multiband MIMO transceiver of W-CDMA, WLAN and UWB communication is different from what **Medvedev** used the sharing memory bank (figure 3, element 332), and the tri-mode interleaver and tri-node coding processor (figure 3, element 314, column 20 line 34 to column 21 line 21).

**Franca-Neto** disclosed an oscillator operating close to transistor's maximum frequency based on one or several repetitions of an amplifier design (or circuit) using simultaneous input and output matching. Franca-Neto also mentioned that the disclosed circuit might be used for a WLAN, UWB, and OFDM (paragraph [0018]), which means for a single mode operation. Franca-Neto's invention focused on the circuit device design rather than a multimode and multiband communication system and architecture. In addition, Franca-Neto's invention did not address the multimode and multiband transceiver systems into in a single device. Note that the applicant's invention presents the multimode and multiband MIMO transceiver of W-CDMA, WLAN and UWB communication and combines them into a single device as well as focuses on multimode and multiband communication system and architecture.

Therefore, the applicant's invention of using the next-generation multimode and multiband MIMO transceiver of W-CDMA, WLAN and UWB communications is different from what **Franca-Neto's** invention on the circuit devices.

**Catreux et al.** disclosed a system and method for generating transmit weighting values for signal weighting that may be use in various transmitter and receiver structures. Catreux further disclosed some embodiments in the context of a single carrier system, the frequency selective transmit signal weighting with applied to WCDMA, Rake receiver (paragraph [0060]). It is clear that Catreux focus on a weighting function for frequency selective transmit signal in multiple antenna communication systems rather than a multimode and multiband MIMO transceiver of W-CDMA, WLAN and UWB communication in a single device as the applicant invented. Therefore, the applicant's invention is different from what Catreux's invention on the weighting function for frequency selective transmit signal.

In summary, **Medvedev, et al., Franca-Neto, and Catreux et al.** are arts but they are different from each other. Medvedev presented MIMO systems with multiple transmission modes that focus on the techniques to transmit data on a number of

transmission channels using CSI. Franca-Neto presented an oscillator operation with a transistor's maximum frequency based on one or several repetitions of an amplifier design. Catreux invented a method of generating transmit weighting for signal weighting for multiple antenna communication systems. They are for individual different communication systems, but not integrating all the communication systems of W-CDMA, WLAN, and UWB into one single device. Applicant's invention is the multimode and multiband MIMO transceiver of W-CDMA, WLAN and UWB communication. It can be used for wireless communications as a cellular phone and fixed wireless communications as a wireless Internet modem. In addition, it is a single device that is enable to transmit a very-high data rate for different applications in multiple environments. Therefore, application's invention of the multimode and multiband MIMO transceiver of W-CDMA, WLAN and UWB communication is fundamentally different from the Medvedev, Franca-Neto, and Catreux's systems or any combination thereof. As a result, it is impossible and unobvious to one having ordinary skill in the art to develop the multimode and multiband MIMO transceiver of W-CDMA, WLAN and UWB communication even given Medvedev, Franca-Neto, and Catreux's prior-art references.

**Medvedev, Franca-Neto, and Catreux Do Not Contain Any Justification To Support Individual or Their Combination, Much Less In The Manner Proposed**

With regard to the individual invention of Medvedev, Franca-Neto, and Catreux, it has been shown that there are fundamentally differences between applicant's invention and the individual invention of Medvedev, Franca-Neto, and Catreux as applicant discussed above. Therefore, it is invalid to use any prior-art references to reject applicant's invention under 35 U.S.C. 103(a).

With regard to any combination of Medvedev, Franca-Neto, and Catreux's prior art references, it is well known that in order to for any prior-art references themselves to be validly combined for use in a prior-art rejection of the Section 103, the reference themselves (or some other prior art) must suggest that they be combined, e.g., as was stated in In re Sernaker, 217 U.S.P.Q. 1.6 (C.A.F.C. 1983):

“Prior art references in combination do not make an invention obvious unless something in the prior art references would suggest the advantage to be derived from combining their teaching.”

That the suggestion to combine the references should not come from applicant was forcefully stated on Orthopedic Equipment Co. v. United States, 217 U.S.P.Q. 193, 199 (CAFC 1983):

“It is wrong to use the patent in suit [here the patent application] as a guide through the maze of prior art references, combining the right references in the right way to achieve the result of the claims in suit [here the claims pending]. Monday morning quarterbacking is quite improper when resolving the question of nonobviousness in a court of law [here the PTO].”

As was further stated in Uniroyal, Inc. v. Rudkin-Wiley Corp., 5 U.S.P.Q.2d 1434 (C.A.F.C. 1988):

“[w]here prior-art references require selective combination by the court to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gleaned from the invention itself. . . . Something in the prior art must suggest the desirability and thus the obviousness of making the combination.” [Emphasis supplied]

In line with these decisions, the Board stated in Ex parte Levengood, 28 U.S.P.Q.2d 1300 (P.T.O.B.A.&I, 1993):

“In order to establish a prima facie case of obviousness, it is necessary for the examiner to present evidence, preferably in the form of some teaching, suggestion, incentive or inference in the applied prior art, or in the form of generally available knowledge, that one having ordinary skill in the art would have been led to combine the relevant teachings of the applied references in the proposed manner to arrive at the claimed invention, . . . That which is within the capabilities of one skilled in the art is not synonymous with obviousness. . . . That one can reconstruct



and/or explain the theoretical mechanism of an invention by means of logic and sound scientific reasoning does not afford the basis for an obviousness conclusion unless that logic and reasoning also supplies sufficient impetus to have led one of ordinary skill in the art to combine the teachings of the references to make the claimed invention .... Our reviewing courts have often advised the Patent and Trademark Office that it can satisfy the burden of establishing a prima facie case of obviousness only by showing some objective teaching in either the prior art, or knowledge generally available to one of ordinary skill in the art, that “would lead” that individual ‘to combine the relevant teachings of the references.’ ...

Accordingly, an examiner cannot establish obviousness by locating references which describe various aspects of a patent applicant’s invention without also providing evidence of the motivating force which would impel one skilled in the art to do what the patent applicant has done.”

In the present case, there is no reason given in the Office Action on May 30, 2006, to support the proposed combination, other than the statements “It would have been obvious for a person of ordinary skill in the art at the time the invention was made to incorporate the WLAN, UWB OFDM, as taught by Franca-Neto to the system of Medvedev to cover a wider range of systems for compatibility,” and “It would have been obvious for a person of ordinary skill in the art at the time the invention was made to incorporate the W-CDMA and Rake and baseband processor, as taught by Catreux to the system of Medvedev and Franca-Neto to further cover a wider range of systems for compatibility.” However, the fact that all of the prior-art references either in individual or any combination form is not sufficient to gratuitously and selectively substitute parts of one reference for a part of another reference in order to meet applicant’s novel claims because there are fundamental differences between the applicant’s invention of the multimode and multiband MIMO transceiver of W-CDMA, WLAN and UWB communication and Medvedev’s MIMO systems with multiple transmission modes using CSI, and Franca-Neto’s oscillator operation based on one or several repetitions of an amplifier design, and Catreux’s method of generating transmit weighting for multiple

antenna communication systems. Thus, applicant submits the fact that the multimode and multiband MIMO transceiver of W-CDMA, WLAN and UWB communication produces advantages militates in favor of applicant because it proves that the applicant's invention produces new and unexpected results and hence is unobvious.

As stated in the above Levengood case again:

"That one can reconstruct and/or explain the theoretical mechanism of an invention by means of logic and sound scientific reasoning does not afford the basis for an obviousness conclusion unless that logic and reasoning also supplies sufficient impetus to have led one of ordinary skill in the art to combine the teachings of the references to make the claimed invention."

Therefore, applicant submits that individual or any combination form of Medvedev, Franca-Neto, and Catreux is not legally justified and is therefore improper. Thus, applicant submits that the rejection on these prior-art references is also improper and should be withdrawn.

**Even If Medvedev, Franca-Neto, and Catreux Were To Be Combined In The Manner Proposed, The Proposed Combination Would Not Show All The Novel Physical Feature Of the Claim 1**

However, even if any combination of Medvedev, Franca-Neto, and Catreux were legally justified, the claim 1 would still have novel and unobvious physical features over the proposed combination. In other words, applicant's invention, as defined by the claim 1, comprises much more than merely substitutes a plurality of templates to one template. Furthermore, there are fundamental differences between applicant's invention of the physical feature structure and expected results, and any combination of Medvedev, Franca-Neto, and Catreux. It is also clear that applicant's invention has novel and unobvious physical features over any prior-art references.

Thus, applicant submits that the present invention of the multimode and multiband MIMO transceiver of W-CDMA, WLAN and UWB communication is much

more than merely substituting a plurality of templates for one template and that the claim 1 clearly recites novel physical subject matter, which distinguishes over individual or any possible combination of Medvedev, Franca-Neto, and Catreux.

**The Novel Physical Features Of the Claim 1 Produce New And Unexpected Results And Hence Are Unobvious And Patentable Over These References Under Section 103.**

Applicant also submits that the novel physical features of the claim 1 is unobvious and hence patentable under Section 103 since it produces new and unexpected results over Medvedev, Franca-Neto, and Catreux or any combination thereof.

These new and unexpected results are the ability of applicant's invention of the multimode and multiband MIMO transceiver of W-CDMA, WLAN and UWB communication for communicating the transmitted signals with very-high data not only in the cellular wireless communications but also in the fixed wireless communications to provide seamless communications with multiple applications in multiple environments. Therefore, applicant's invention of the multimode and multiband MIMO transceiver of W-CDMA, WLAN and UWB communication is a novel and vastly superior to that of either Medvedev, Franca-Neto, and Catreux or any possible combination thereof. The novel physical features of applicant's invention of the multimode and multiband MIMO transceiver of W-CDMA, WLAN and UWB communication that affects these differences are, as stated, clearly recited in the claim 1.

**The Dependent Claims Are A Fortiori Patentable Over Medvedev, Franca-Neto, and Catreux**

The amendment dependent claims 4-9 and 11, and the original dependent claims 2-3 and 10 incorporate all the subject matter of the amendment independent claim 1 and add additional subject matter that makes them a fortiori and independently patentable over these prior-art references. Accordingly, applicant submits that the amendment dependent claims 4-9 and 11, and the original dependent claims 2-3 and 10 are a fortiori patentable and should also be allowed.

### Conclusion

For all the reasons given above, applicant respectfully submits that the specification and claims are new in proper form, and that the claims all define patentable over the prior-art references. Therefore, applicant submits that this application is now in full condition for allowance, which action applicant respectfully solicits.

### Conditional Request For Constructive Assistance

Applicant has amended the specification and the claims of this application so that they are proper, definite, and define novel physical feature structure, which is also unobvious. Therefore, this application is submitted that patentable subject matter is clearly present. If, for any reason this application is not believed to be in full condition for allowance, the applicant respectfully requests the constructive assistance and suggestions of the Examiner pursuant to M.P.E.P. Section 2173.02 and Section 707.07(j) in order that the undersigned can place this application in allowable condition as soon as possible and without the need for further proceedings.

Very respectfully,

  
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Date: August 1, 2006

Inventor's Signature: 